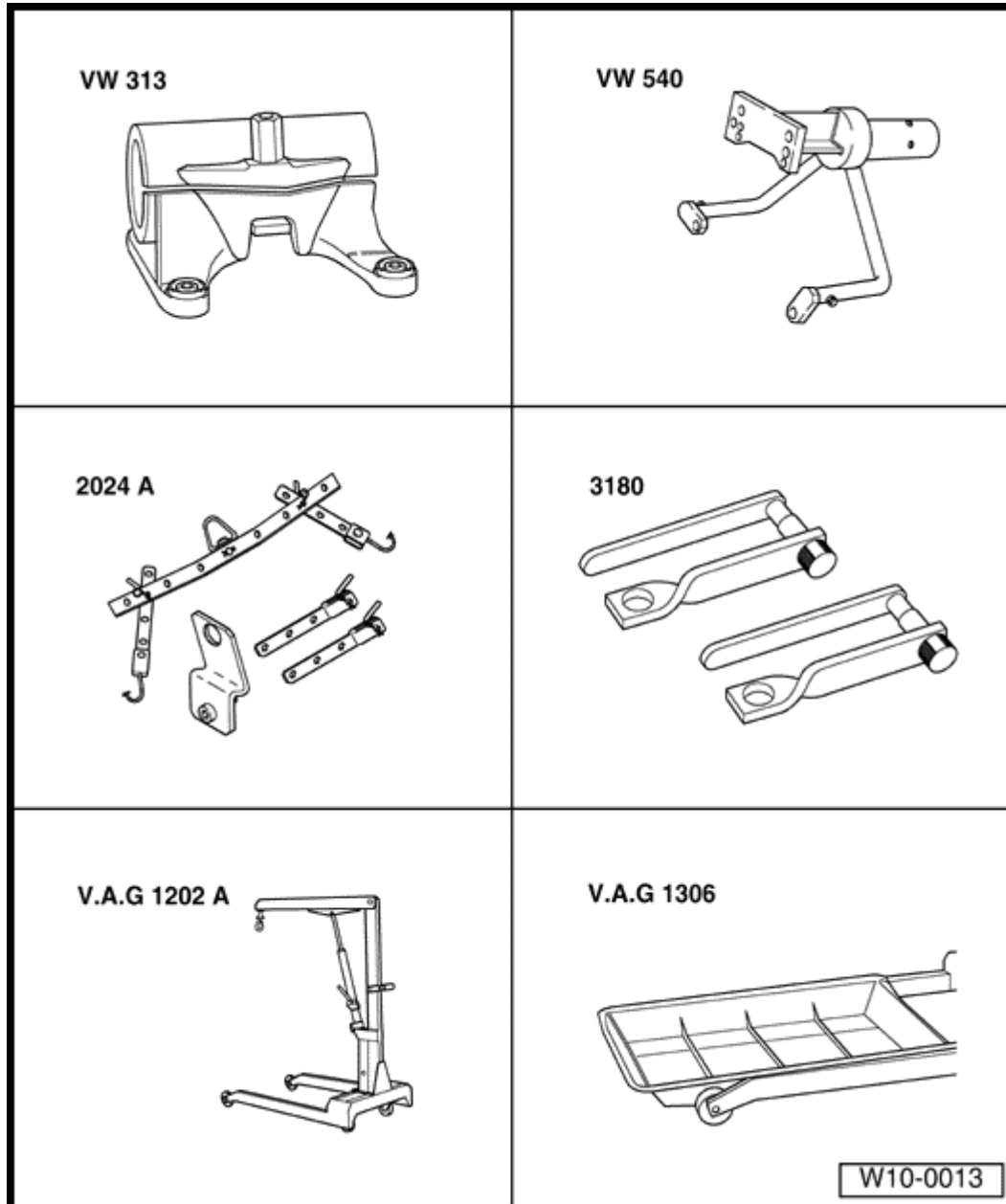


Volkswagen New Beetle
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical
10 Engine-Assembly (Page GR-10)

- [Engine, removing and installing](#)
- [Assembly mountings](#)
- [Engine and gearbox mountings, aligning](#)
- [Installation notes](#)
- [Removal notes](#)
- [Securing engine to assembly stand](#)
- [Tightening torques](#)
- [Vehicles with air conditioner, additional information and removal instructions](#)

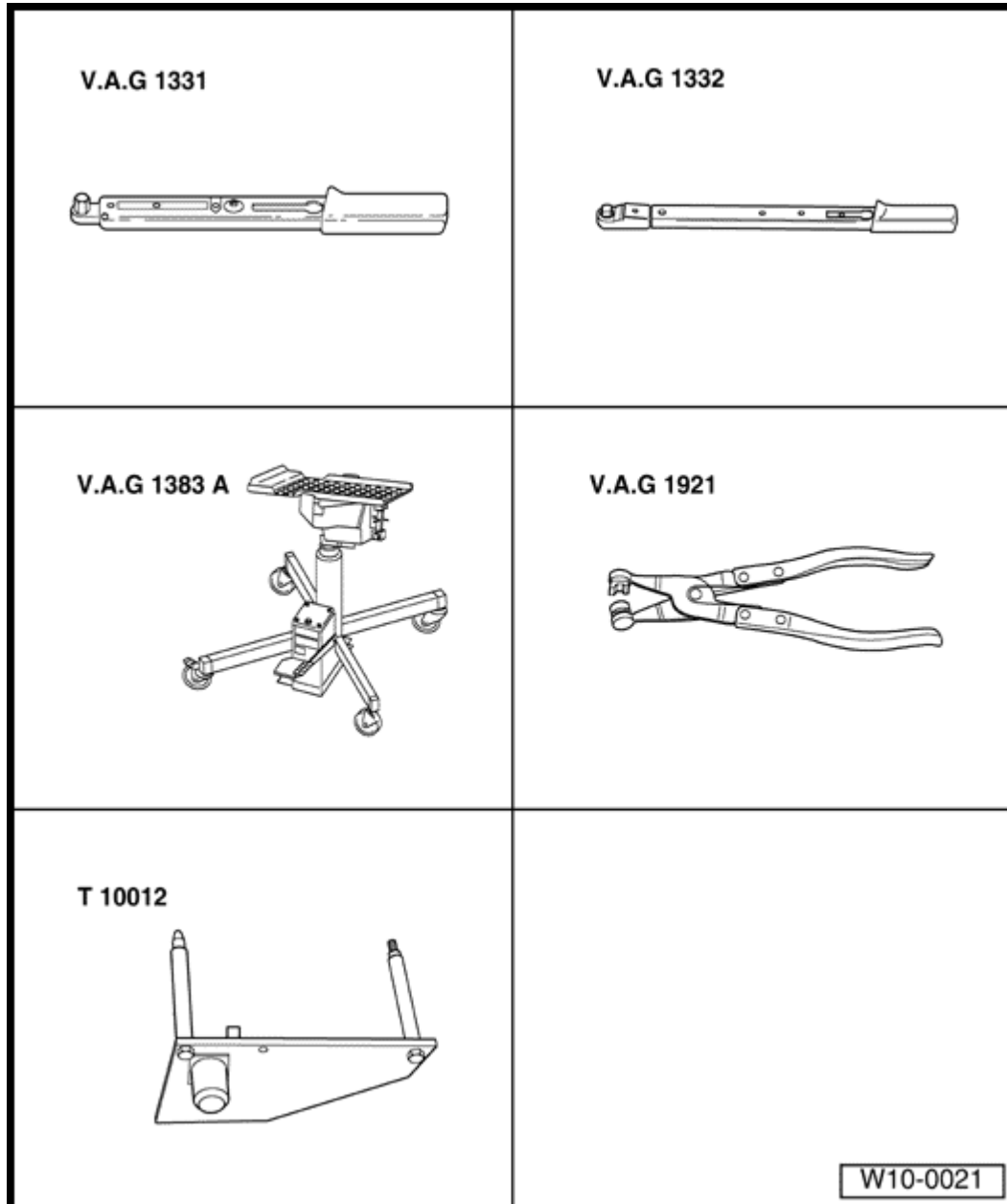
Volkswagen New Beetle
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical
Technical data (Page 10-1)



Special tools and equipment

- ◆ VW 313 Support clamp
- ◆ VW 540 Engine and gearbox support
- ◆ 2024 A Lifting tackle
- ◆ 3180 Retainer (for engine code AGU)
- ◆ V.A.G 1202 A Workshop crane
- ◆ V.A.G 1306 Drip tray

Volkswagen New Beetle
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical
Engine, removing and installing (Page 10-2)



- ◆ V.A.G 1331 Torque wrench (5-50 Nm)
- ◆ V.A.G 1332 Torque wrench (40-200 Nm)
- ◆ V.A.G 1383 A Engine/gearbox jack
- ◆ V.A.G 1921 Spring - type clip pliers
- ◆ T10012 Engine bracket
- ◆ V.A.S 5085 Step ladder
- ◆ G 000 100 grease (vehicles with manual gearbox)
- ◆ Bolt M10 X 25 / 8.8
- ◆ Cable tie

Volkswagen New Beetle

1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical

Engine, removing and installing (Page 10-3)

Removal notes

- First check whether a coded radio is fitted. If this is the case obtain the anti - theft coding.

The engine is removed downward together with the gearbox.

- With ignition switched off, disconnect battery Ground strap.

All cable ties which are opened or cut open when removing engine must be replaced in the same position when installing engine.

- Remove engine cover.

- Remove air cleaner:

⇒ [Repair Manual, 1.8 Liter 4 - Cyl. 5V Turbo OBDII Fuel Injection & Ignition, Repair Group 24](#)

- Remove intake hose between air mass meter (G70) and throttle valve control part (J338).

⇒ [Repair Manual, 1.8 Liter 4 - Cyl. 5V Turbo OBDII Fuel Injection & Ignition, Repair Group 24](#)

- Remove power steering fluid reservoir from battery holder without disconnecting hoses.

Volkswagen New Beetle

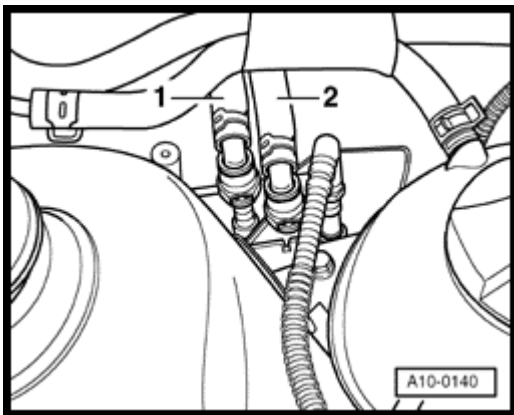
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical

Engine, removing and installing (Page 10-4)

- Fasten reservoir to lock carrier.
- Remove battery and battery retainer.
- Pull vacuum and breather hoses off engine.

WARNING!

Fuel supply pipes are under pressure! Before removing from hose connection wrap a cloth around the connection. Then release pressure by carefully pulling hose off connection.

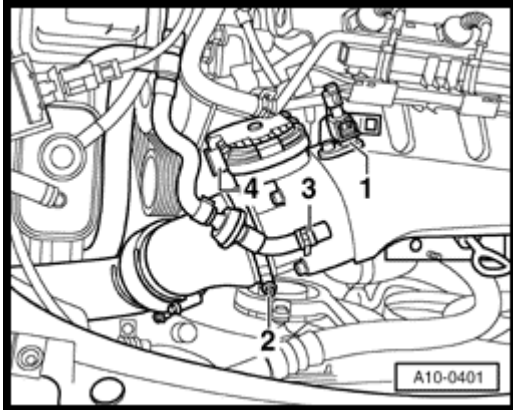


- Pull off fuel supply line - 1 - and fuel return line - 2 - at disconnecting location by applying pressure to the disengaged buttons.
- Seal the pipes so that the fuel system is not contaminated by dirt etc.

Volkswagen New Beetle

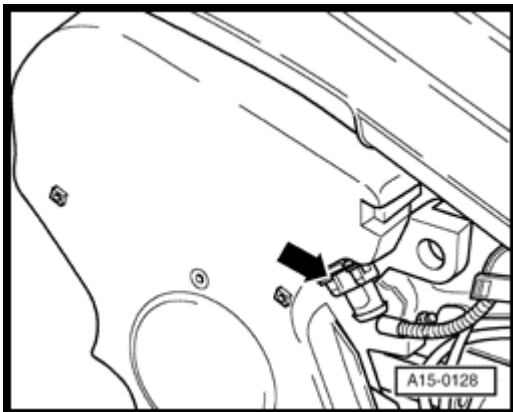
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical

Engine, removing and installing (Page 10-5)



A

- Loosen and remove intake hose (between charge air cooler and throttle valve control unit) at throttle valve control unit.
- Disconnect harness connector for intake air temperature (G42), - 1 - and - 4 - for throttle valve control unit (J338) below throttle valve control unit.



A

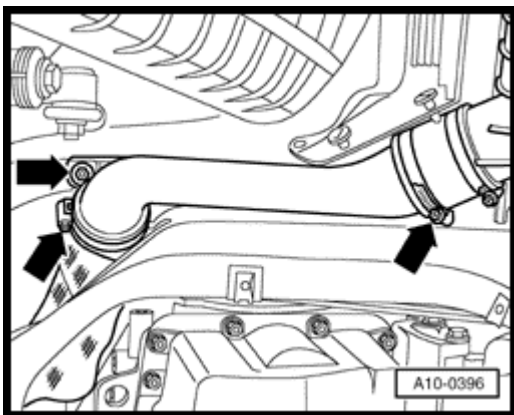
- Pull connector off Hall sender (G40) - arrow - .
- Unbolt vacuum canister from cylinder head cover and pull from bracket.

Volkswagen New Beetle

1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical

Engine, removing and installing (Page 10-6)

- Disconnect fuel injectors harness connector and unclip bracket rail from fuel distributor.
- Unscrew Ground wire between ignition coil - 1 - and - 2 - .
- Disconnect connectors from ignition coils.
- Disconnect connector for speedometer vehicle speed sensor (G22) at rear of transmission.
- Remove center, left and right insulation tray:
⇒ [Repair Manual, Body-Exterior, Repair Group 50](#)



A

- Remove air duct to charge air cooler at lower right of long member.

Vehicles with manual gearbox

- Disconnect selector mechanism from gearbox.
⇒ [Repair Manual, Manual Transmission 02J, Repair Group 34](#)
- Remove hydraulic clutch slave cylinder.
⇒ [Repair Manual, 5 - Speed Manual Transmission 02J, Repair Group 30](#)

Volkswagen New Beetle

1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical

Engine, removing and installing (Page 10-7)

Notes:

Clutch pedal must not be depressed.

Vehicles with automatic gearbox

- Remove selector lever cable from gearbox:

⇒ [Repair Manual, Automatic Transmission 01M, Repair Group 37](#)

Continued for all vehicles

- Drain coolant ⇒ [Page 19-13](#)
- Pull radiator coolant hoses off engine using hose clip pliers V.A.G 1921.
- Remove coolant hoses at heater core.
- Remove coolant hose to coolant pipe at throttle valve control unit.
- Remove additional fan at right side of vehicle if present.
- Disconnect both harness connectors for cooling fan at notch at left bottom.

Volkswagen New Beetle

1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical

Engine, removing and installing (Page 10-8)

- Remove inter - connecting, coolant, vacuum and intake hoses on engine.
- Remove secondary air pump motor and bracket.
- Disconnect all electric wires from gearbox, alternator and starter and move clear.
- Remove securing clamps for power steering pressure pipe.
- Remove ribbed belt ⇒ [Page 13-8](#) .
- Remove power assisted steering vane pump with bracket and lay to side; hoses remain connected.

⇒ [Repair Manual, Suspension, Wheels, Steering, Repair Group 48](#)

Vehicles with air conditioner

WARNING!

The air conditioner refrigerant circuit must not be opened.

- Remove air conditioner compressor.
- Observe additional notes and assembly work ⇒ [Page10 - 15](#).
- Remove generator.

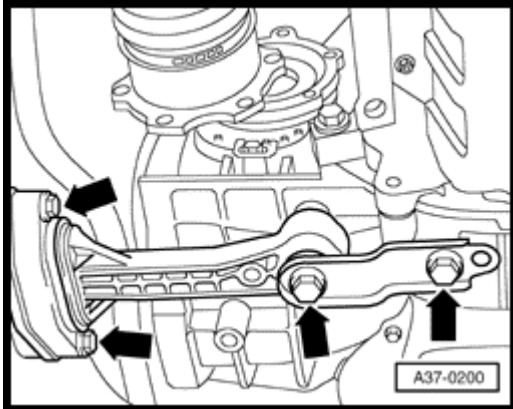
⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#).

- Remove compact bracket including tightening element for ribbed V - belt ⇒ [page 13-7](#) , item 19.

Volkswagen New Beetle
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical
Engine, removing and installing (Page 10-9)

Continued for all vehicles

- Remove protective cover for right - hand inner constant velocity joint from engine.
 - Remove right - hand drive shaft and disconnect left - hand drive shaft at gearbox.
- ⇒ [Repair Manual, Suspension, Wheels, Steering, Repair Group 40](#)



A

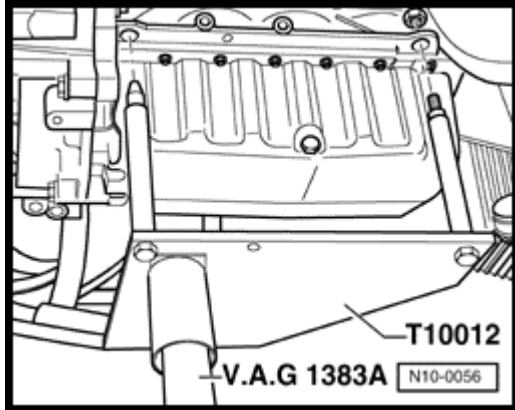
- Remove pendulum support - arrows - .
- Remove front exhaust pipe with catalytic converter ⇒ [page 26-2](#) .

Volkswagen New Beetle

1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical

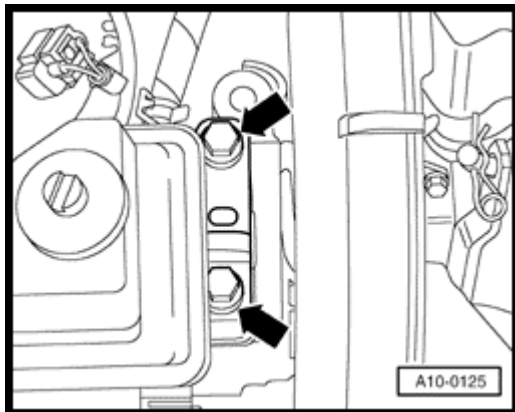
Engine, removing and installing (Page 10-10)

Continued for all vehicles



A

- Fit engine bracket T 10012 onto cylinder block with a securing nut and M10 X 25/ 8.8 bolt and tighten to approx. 40 Nm.
- Lift engine and gearbox lightly using engine/gearbox jack V.A.G 1383 A.



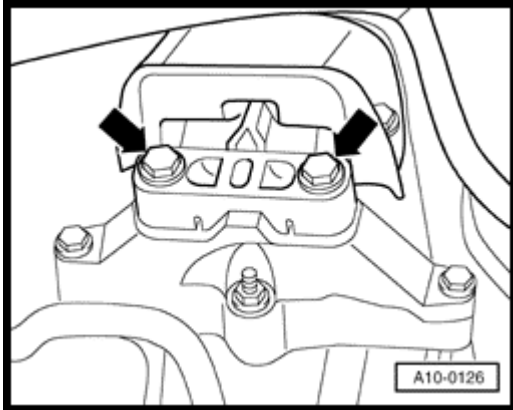
A

- Unbolt engine side of assembly mounting from engine carrier at top - arrows - .

Notes:

To remove securing bolts use step ladder V.A.S 5085.

Volkswagen New Beetle
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical
Engine, removing and installing (Page 10-11)



A

- Unbolt gearbox side of assembly mounting from gearbox carrier at top - arrows - .
- Carefully lower engine with gearbox.
- When doing this guide the power assisted steering pressure pipe past the gearbox.

Notes:

Engine with gearbox must be guided carefully when lowering to prevent damage to the bodywork.

Volkswagen New Beetle

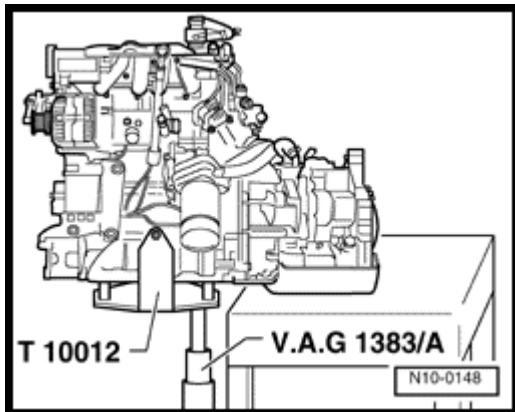
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical

Engine, removing and installing (Page 10-12)

Securing engine to assembly stand

When working on the engine, it should be secured to the assembly stand support clamp VW 313 using the engine and gearbox bracket VW 540.

Work sequence



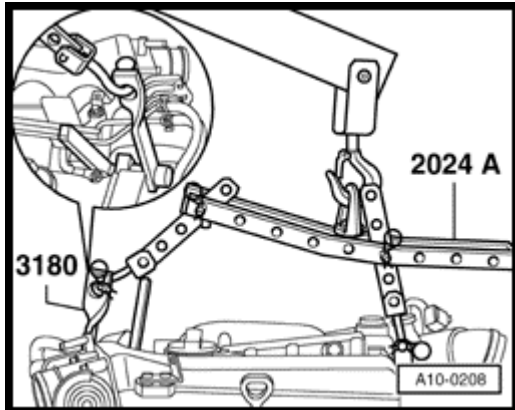
- Move engine/transmission with V.A.G 1383 A lift to a workbench.
- Lower engine/transmission unit so that the transmission is supported (at supporting point).
- Remove gearbox.

Volkswagen New Beetle 1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical Engine, removing and installing (Page 10-13)

Vehicles with automatic gearbox

- Secure torque converter against "falling out" after separating engine from gearbox.

Continued for all vehicles



A

- Attach lifting tackle 2024A with bracket 3180 as follows and lift off engine/gearbox jack V.A.G 1383 with workshop crane V.A.G 1383 A.

Pulley end: 3rd hole in hook at position 1

Flywheel end: 2nd hole in hook at position 5

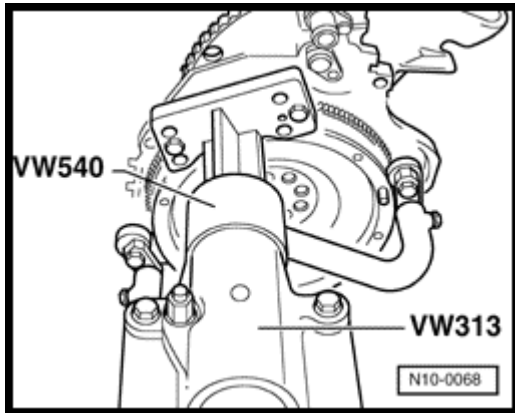
WARNING!

The hooks and locating pins must be secured with locking pins.

Notes:

- ◆ *The positions marked 1-4 on the bar must be toward the pulley end.*
- ◆ *The holes in the hooks are counted up from the hook.*

Volkswagen New Beetle
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical
Engine, removing and installing (Page 10-14)



A

- Secure engine to support clamp VW 313 using engine and gearbox bracket VW 540.

Volkswagen New Beetle

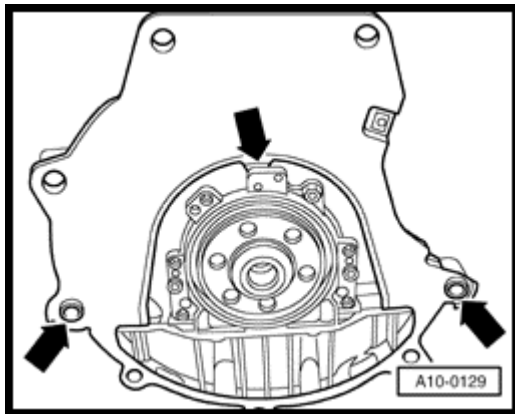
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical

Engine, removing and installing (Page 10-15)

Installation notes

Installation is carried out in the reverse sequence, when doing this note the following:

- Check whether the dowel sleeves for centralizing engine/gearbox are in the cylinder block, install if necessary.



- Fit intermediate plate onto sealing flange and slide onto dowel sleeves - arrows - .

Vehicles with manual gearbox

- Check centering of clutch drive plate, if necessary.
- Check clutch release bearing for wear, renew if necessary.
- Lightly grease clutch release bearing, release bearing guide sleeve and splines on input shaft with G 000 100.
- Install hydraulic clutch slave cylinder:

⇒ [Repair Manual, 5 - Speed Manual Transmission 02J, Repair Group 30](#)

- Install selector mechanism.
- If necessary, adjust gearchange cables:

⇒ [Repair Manual, Manual Transmission 02J, Repair Group 34](#)

Vehicles with automatic gearbox

- Only use nuts approved in parts programme to secure torque converter to drive plate.

Volkswagen New Beetle

1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical

Engine, removing and installing (Page 10-16)

- Install selector cable on gearbox, adjust if necessary:

⇒ [Repair Manual, Automatic Transmission 01M, Repair Group 37](#)

Continued for all vehicles

- When installing the assembly, ensure sufficient clearance to drive shafts.

Vehicles with air conditioner

- Install generator.

⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#).

- Install compact bracket including tightening element for ribbed V - belt ⇒ [page 13-7](#), item 19.

⇒ [Repair Manual, Electrical Equipment, Repair Group 27](#)

- Install A/C compressor.

Volkswagen New Beetle

1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical

Engine, removing and installing (Page 10-17)

Continued for all vehicles

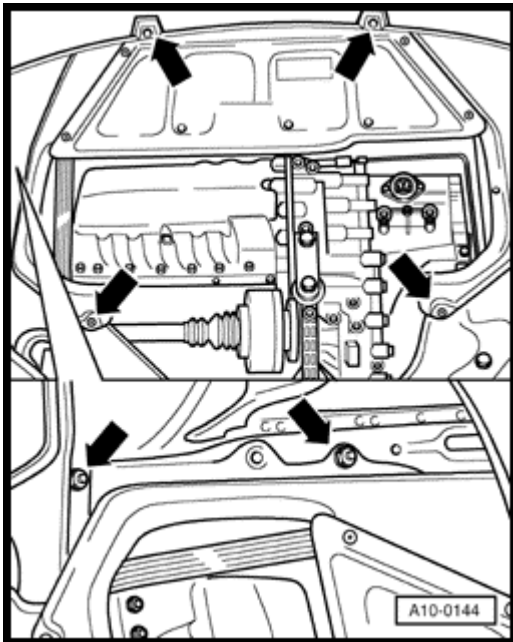
- Align engine and gearbox mountings ⇒ [Page 10-20](#) .

Installing drive shafts:

⇒ [Repair Manual, Suspension, Wheels, Steering, Repair Group 40](#)

- Remove right hand inner constant velocity joint protective cover from engine if fitted.
- Remove front exhaust pipe ⇒ [Page 26-1](#) , removing and installing parts of exhaust system.
- Push on and tighten intake hose (between charge air cooler and throttle valve control unit) at throttle valve control unit.
- Installing P.A.S. power steering pump:
⇒ [Repair Manual, Suspension, Wheels, Steering, Repair Group 48](#)
- Electrical connections and routing:
⇒ [Repair Manual, Electrical Equipment, Repair Group 97](#)
- Install ribbed belt ⇒ [Page 13-8](#) .

Volkswagen New Beetle
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical
Engine, removing and installing (Page 10-18)



A

- Install center, left and right insulation trays:

⇒ [Repair Manual, Body-Exterior, Repair Group 50](#)

- Install secondary air pump.

Filling with coolant ⇒ [Page 19-13](#)

- Carry out a test drive and check DTC memory:

⇒ [Repair Manual, 1.8 Liter 4 - Cyl. 5V Turbo OBDII Fuel Injection & Ignition, Repair Group 01](#)

- Match engine electronics control unit to throttle valve control part:

⇒ [Repair Manual, 1.8 Liter 4 - Cyl. 5V Turbo OBDII Fuel Injection & Ignition, Repair Group 24](#)

- Read out readiness code:

⇒ [Repair Manual, 1.8 Liter 4 - Cyl. 5V Turbo OBDII Fuel Injection & Ignition, Repair Group 01](#)

- If DTC memory has been erased or the engine control unit separated from the permanent positive, the readiness code must be generated again.

⇒ [Repair Manual, 1.8 Liter 4 - Cyl. 5V Turbo OBDII Fuel Injection & Ignition, Repair Group 01](#)

Volkswagen New Beetle
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical
Engine, removing and installing (Page 10-19)

Tightening torques

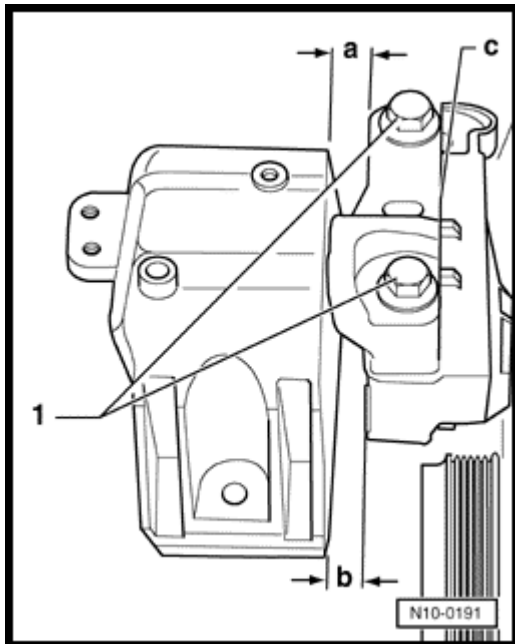
Bolted joint		Tightening torque
Bolts, nuts	M6	10 Nm
	M7	15 Nm
	M8	25 Nm
	M10	40 Nm
	M12	60 Nm
Exceptions:		
Engine to gearbox connecting bolts	M10	45 Nm
Engine to gearbox connecting bolts	M12	80 Nm
Torque converter to drive plate		60 Nm
Drive shaft to joint flange/gear-box		40 Nm

Volkswagen New Beetle
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical
Engine, removing and installing (Page 10-20)

Engine and gearbox mountings, aligning

WARNING!

Before loosening the bolts the assemblies must be secured with the special tool 10-222A.



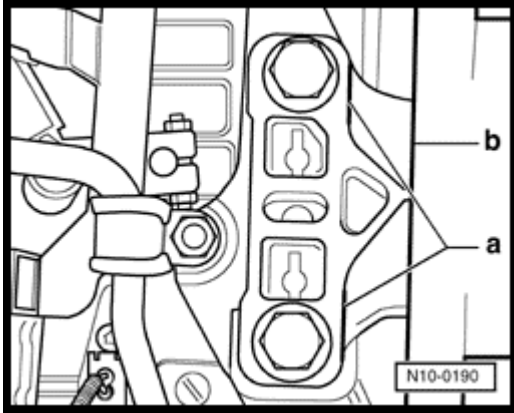
Engine mounting

a = 14.0 mm

b = at least 10.0 mm

Both bolt heads 1 must be in flush with edge - c - .

Volkswagen New Beetle
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical
Engine, removing and installing (Page 10-21)



A

Gearbox mounting

Edges - a - and - b - must be parallel with one another.

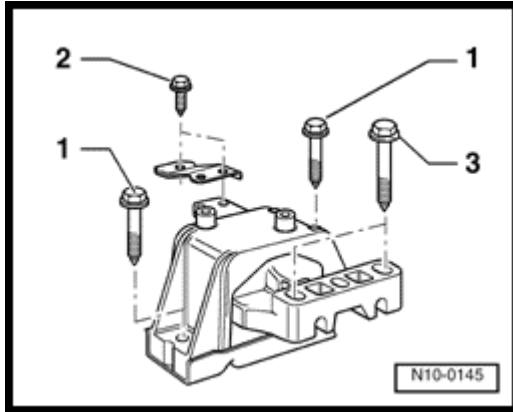
Volkswagen New Beetle

1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical

Engine, removing and installing (Page 10-22)

Assembly mountings

Tightening torques



A

Engine mounting

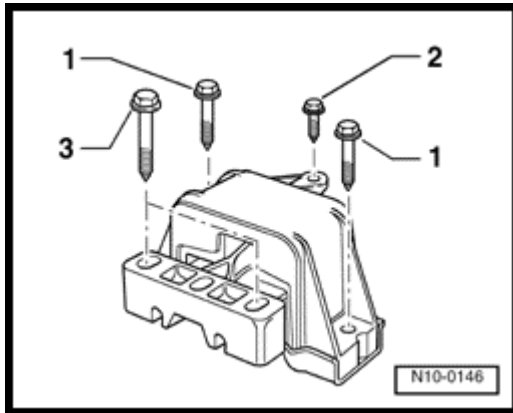
- 1 - Mounting to body 1): 40 Nm + 90° (1/4 turn)
- 2 - Mounting/bracket to body: 25 Nm
- 3 - Mounting to engine bracket 1): 60 Nm + 90° (1/4 turn)

1) Replace bolts

Volkswagen New Beetle

1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical

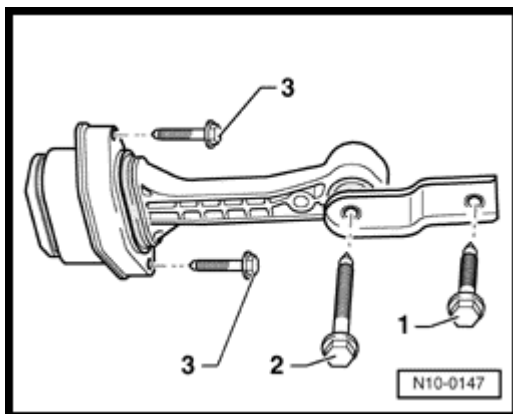
Engine, removing and installing (Page 10-23)



Gearbox assembly mounting

- 1 - Mounting to body 1): 40 Nm + 90° (1/4 turn)
- 2 - Mounting to body: 25 Nm
- 3 - Mounting to gearbox console 1): 60 Nm + 90° (1/4 turn)

1) Replace bolts



Pendulum support

- 1 - Pendulum support to gearbox 1): 40 Nm + 90° (1/4 turn)
- 2 - Pendulum support to gearbox 1): 40 Nm + 90° (1/4 turn)
- 3 - Pendulum support to subframe 1): 20 Nm + 90° (1/4 turn)

1) Replace bolts

Volkswagen New Beetle
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical
Engine, removing and installing (Page 10-24)

Vehicles with air conditioner, additional information and removal instructions

WARNING!

The air conditioner refrigerant circuit must not be opened.

Notes:

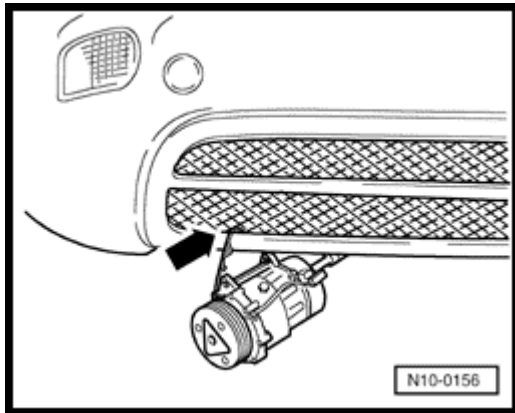
To prevent damage to condenser and also to the refrigerant pipes/hoses, ensure that the pipes and hoses are not stretched, kinked or bent.

To facilitate removing and installing the engine without opening the refrigerant circuit:

- Remove retaining clamp(s) from refrigerant pipes.
- Remove ribbed belt ⇒ [Page 13-8](#) .
- Remove air conditioner compressor.

⇒ [Repair Manual, Heating & Air Conditioning , Repair Group 87](#)

Volkswagen New Beetle
1.8 Liter 4-Cyl. 5V Turbo OBD II Engine Mechanical
Engine, removing and installing (Page 10-25)



A

- Secure air conditioner compressor to towing eye so that the refrigerant hoses/pipes are not under tension.

Notes:

To prevent damage to bumper protect with adhesive tape.